

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of all claims in the application.

LISTING OF THE CLAIMS

Claims:

1. (Currently amended) A device for transporting flat workpieces in conveyorized processing lines with a plane of transportation for the workpieces, said device comprising the following features:
 - a) at least one pair of rollers that are disposed on a respective side of the plane of transportation and are facing each other for transporting the workpieces, said rollers each having at least one elevation encircling said rollers, wherein said at least one pair of rollers includes at least one first roller located on one side of the plane of transportation and at least one second roller located on the other side of the plane of transportation, and
b) transport drives associated with said rollers, wherein the elevations (7) on the first roller (1) of a pair of rollers located on one side of the plane of transportation (12) are staggered relative to the elevations (7) provided on the second roller (2) of the pair of rollers on the other side of the plane of transportation (12);
wherein said elevations are located along the plane of transportation in the region of the conveying path for contacting workpieces.

2. (Original) The device according to claim 1, wherein the elevations (7) annularly or helically encircle the rollers (1, 2).

3. (Previously Presented) The device according to claim 1, wherein several axially spaced apart elevations (7) are provided on the at least one roller (1, 2).

4. (Previously Presented) The device according to claim 1, wherein there is provided at least one bordering elevation (9) at the end of the rollers (1, 2), said bordering elevation annularly encircling the respective one of the rollers (1, 2), having a diameter such and being disposed in such a manner that the work piece (4), which has a predetermined thickness, may only be deformed by particles (10) adhering to the rollers (1, 2) to the extent permitted by the elevations (7).

5. (Previously Presented) The device according to claim 1, wherein there is provided at least one bordering elevation (9) at the end of the rollers (1, 2), said bordering elevation annularly encircling the respective one of the rollers (1, 2) and wherein said bordering elevations (9) are disposed on the rollers (1, 2) of a pair of rollers so as to face each other.

6. (Previously Presented) The device according to claim 1, including spaced apart bearings (3, 5), wherein the minimum spacing between the rollers (1, 2) of a pair of rollers is set by the spacing between the bearings (3, 5) of the rollers (1, 2) to be such that the workpieces (4) are not deformed beyond the size of the particles (10) adhering to the rollers (1, 2).

7. (Previously Presented) The device according to claim 2, wherein the spacings between the elevations (7) annularly encircling the rollers (1, 2) or the

spacings between respective turns of the elevations (7) helically encircling the rollers (1, 2) are at least 10 % greater than the width of the elevations (7).

8. (Previously Presented) The device according to claim 1, wherein the height of the elevations (7) ranges from 0.1 mm to 10 mm.

9. (Previously Presented) The device according to claim 2, wherein the width of the elevations (7) as well as the spacings between the elevations (7) annularly encircling the rollers (1, 2) and the spacings between respective turns of the elevations (7) helically encircling the rollers (1, 2) may range from 2 mm to 200 mm.

10. (Previously Presented) The device according to claim 4, wherein the rollers (1, 2) are lengthened by at least the length of the bordering elevations (9) at the ends of the rollers (1, 2) and are disposed in a processing line in such a manner that the bordering elevations (9) at the ends of the rollers (1, 2) are located outside of a useful area of a conveying path in the processing line occupied by the workpieces (4).

11. (Previously Presented) The device according to claim 1, wherein the elevations (7) have rounded front sides (8).

12. (Previously Presented) The device according to claim 2, wherein the rollers (1, 2) are made from at least one material selected from the group comprising metal, plastic material and ceramics.

13. (Previously Presented) The device according to claim 1, wherein the rollers (1, 2) provided with the elevations (7) are configured to be formed by axles with rings secured thereon in such a manner that the rings are reliably prevented from slipping and twisting.

14. (Currently Amended) A method of transporting flat workpieces (4) in conveyorized processing lines with a plane of transportation for the workpieces (4) and with at least one pair of rollers (1, 2), said rollers facing each other and being disposed on a respective side of the plane of transportation for transporting the workpieces (4), wherein said pair of rollers includes at least one first roller located on one side of the plane of transportation and at least one second roller located on the other side of the plane of transportation, the rollers (1, 2) having each at least one elevation (7) encircling the rollers (1, 2), the elevations (7) on the first roller (1) of a pair of rollers being staggered relative to the elevations (7) on the second roller (2) of the pair of rollers on the other side of the plane of transportation, and with transport drives associated with the rollers (1, 2), the workpieces (4) being supplied to the rollers (1, 2) of the at least one pair of rollers in the plane of transportation, said rollers (1, 2) transporting and finally releasing them.

15. (Previously Presented) The device according to claim 2, wherein several axially spaced apart elevations (7) are provided on the at least one roller (1, 2).

16. (Previously Presented) The device according to claim 5, wherein the rollers (1, 2) are lengthened by at least the length of the bordering elevations (9) at the ends of the rollers (1, 2) and are disposed in a processing line in such a manner that the bordering elevations (9) at the ends of the rollers (1, 2) are located outside of a useful area of a conveying path in the processing line occupied by the workpieces (4).

17. (Currently amended) A device for transporting flat workpieces in conveyorized processing lines with a plane of transportation for the workpieces, said device comprising the following features:

a) at least one pair of rollers that are disposed on a respective side of the plane of transportation and are facing each other for transporting the workpieces, said rollers each having at least one elevation encircling said rollers, wherein said pair of rollers includes at least one first roller located on one side of the plane of transportation and at least one second roller located on the other side of the plane of transportation, and

b) transport drives associated with said rollers,

wherein the elevations (7) on the first roller (1) of a pair of rollers located on one side of the plane of transportation (12) are staggered relative to the elevations (7) provided on the second roller (2) of the pair of rollers on the other side of the plane of transportation (12),

wherein the elevations (7) annularly or helically encircle the rollers (1, 2);

wherein several axially spaced apart elevations (7) are provided on the at least one roller (1, 2); and

wherein, there is provided at least one bordering elevation (9) at the end of the rollers (1, 2), said bordering elevation annularly encircling the respective one of the rollers (1, 2), having a diameter such and being disposed in such a manner that the workpiece (4), which has a predetermined thickness, may only be deformed by particles (10) adhering to the rollers (1, 2) to the extent permitted by the elevations (7).

18. (Previously Presented) The device of claim 1, including spaced apart bearings (3,5), wherein several axially spaced apart elevations (7) are provided on the at least one roller (1, 2);

wherein the minimum spacing between the rollers (1, 2) of a pair of rollers is set by the spacing between the bearings (3,5) of the rollers (1, 2) to be such that the

workpieces (4) are not deformed beyond the size of the particles (10) adhering to the rollers (1, 2); and

wherein the elevations (7) have rounded front sides (8).

19. (Previously Presented) The device of claim 1, wherein the elevations (7) annularly or helically encircle the rollers (1, 2);

wherein the width of the elevations (7) as well as the spacings between the elevations (7) annularly encircling the rollers (1, 2) and the spacings between respective turns of the elevations (7) helically encircling the rollers (1, 2) may range from 2 mm to 200 mm;

wherein the elevations (7) have rounded front sides (8); and

wherein the rollers (1, 2) provided with the elevations (7) are configured to be formed by axles with rings secured thereon in such a manner that the rings are reliably prevented from slipping and twisting.

20. (Previously Presented) The device of claim 17, wherein the rollers (1, 2) are lengthened by at least the length of the bordering elevations (9) at the ends of the rollers (1, 2) and are disposed in a processing line in such a manner that the bordering elevations (9) at the ends of the rollers (1, 2) are located outside of a useful area of a conveying path in the processing line occupied by the workpieces (4); and

wherein the rollers (1, 2) provided with the elevations (7) are configured to be formed by axles with rings secured thereon in such a manner that the rings are reliably prevented from slipping and twisting.